We claim:

1. A method of detecting and diagnosing faults in a network having a plurality of nodes through which switched virtual connections can be established, comprising the steps of:

a) recording all attempts at establishing routes through the network; and

b) analyzing the attempted routes to identify the source of a failure.

2. A method as claimed in claim 1, wherein diagnostics data are gathered for each attempted route.

3. A method as claimed in claim 2, wherein said diagnostics data include the location and nature of said failure.

4. A method as claimed in claim 2, wherein said diagnostics data are included in a message propagated through the network.

5. A method as claimed in claim 4, wherein said diagnostics data are included in an information element (IE) field forming part of said message.

6. A method as claimed in claim 1, wherein for each attempt to establish a route through the network, diagnostics data pertaining to each switch and trunk group traversed is recorded.

7. A method as claimed in claim 1, wherein said network is an ATM network, said nodes comprising ATM switches.

8. A method as claimed claim 1, wherein said switched connections are switched virtual channel or soft permanent virtual channel connections.

9. A method of detecting and diagnosing faults in a network having a plurality of nodes through which switched virtual connections can be established, comprising the steps of:

a) entering a diagnostics mode for a given user when a suspected fault is detected;

b) attempting to establish a virtual connection originating at said given user through the network to a destination user via a plurality of alternate routes;

c) collecting diagnostics data for each attempted route through the network to said destination user; and

d) analyzing the said diagnostics data to identify the source of a failure.

10. A method as claimed in claim 9, wherein said diagnostics data is propagated through the network in a message.

11. A method as claimed in claim 10, wherein said diagnostics data include the nature and location of said failure.

12. A method as claimed in claim 10, wherein the call diagnostics data are returned the originating user.

13. A method as claimed in claim 9, wherein said diagnostics mode is automatically deactivated after a predetermined number of connection setups originating from said given user.

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14. A method as claimed in claim 9, wherein said diagnostics data are carried in an information element of a message.

15. A method as claimed in claim 14, wherein said information element is a call trace element.

16. A method as claimed in claim 15, wherein said call trace element includes a call transited field and a call blocked field.

17. A method as claimed in claim 16, wherein said call transited fields and said call blocked fields include data identifying at least domain and node number of a node encountered on an attempted virtual connection.

18. A method as claimed in claim 17, wherein said call transited and call blocked fields also include data identifying slot number and port number of an encountered node.

19. A method as claimed in claim 17, wherein said call blocked field contains data relating to the nature of a routing failure.

20. A method as claimed in claim where said nodes contain hop-by-hop routing tables.

21. A packet switched data communications network, comprising:

a) a plurality of interconnected network nodes;

b) a plurality of users connected to at least some of said network nodes;

c) means for attempting to establish virtual connections between users over a plurality of alternate

routes through said network;

d) means for recording, in a diagnostic mode, attempts at establishing routes through said network; and

e) diagnostic means for analyzing said recorded attempts to identify the source of a failure.

22. A packet switched data communications network as claimed in claim 21, wherein said nodes include service cards having a call control unit and a signalling stack for setting up a virtual connection, and a service card managing a virtual connection collects diagnostics information for said recorded attempts at establishing routes through said network.

23. A packet switched network as claimed in claim 21, wherein each node comprises means for returning to an originating user, in the diagnostic mode, detailed data relating to the progress of an attempted connection through that node.

24. A packet switched network as claimed in claim 23, wherein each node comprises means for inserting said detailed data into an information element of a message returned to an originating user.

25. A packet switched network as claimed in claim 24, further comprising a Node Management Terminal Interface adapted to analyze said detailed data.

26. A packet switched network as claimed in claim 21, wherein said switches are ATM switches.